

NEW GENERA OF BAETIDAE (EPHEMEROPTERA) FROM AFRICA

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Abstract.—Three new genera of Ephemeroptera are described for Afrotropical species of Baetidae with highly distinctive and unusual larvae. They are **Pseudopannota** Waltz and McCafferty, n. gen., including *Pseudopannota bertrandi* (Demoulin), n. comb. (type species) and *Pseudopannota vinckei* (Demoulin), n. comb.; **Ophelmatostoma** Waltz and McCafferty, n. gen., including **Ophelmatostoma kimminsi** Waltz and McCafferty, n. sp. (= *Pseudocloeon* sp. A. Kimmins); and **Acanthiops** Waltz and McCafferty, n. gen., including *Acanthiops marlieri* (Demoulin), n. comb. *Pseudopannota* and *Ophelmatostoma* have highly modified filtering/sweeping mouthparts. *Pseudopannota* also has fused mesothoracic wingpads. *Acanthiops* is one of several genera of baetids with prominent dorsal tubercles.

A largely undescribed fauna of mayflies in the Afrotropics provides a rich source of interesting and phylogenetically important species. We assign the species treated herein to three new genera as a part of our continuing study of baetid systematics. All three of the new genera are striking as larvae because of variously exaggerated morphology not typically found among Baetidae.

Pseudopannota Waltz and McCafferty, NEW GENUS

Larva.—Labrum (Demoulin, 1967, Fig. 2a; 1973, Fig. 3b) notched medially on anterior margin and with labral shelf. Mandibles (Demoulin, 1967, Fig. 2b, c; 1973, Fig. 3c, d) with incisors fused to apex; bases of prosthecae appearing recessed into mandibular margin. Thumb of left mandible broad based and slightly elevated above plane of incisor bases. Maxillae (Demoulin, 1967, Fig. 2d; 1973, Fig. 3e) with elongate three-segmented palps that exceed length of galealacinia; segment 3 of palp much elongated and swollen relative to two basal seg-

ments; galealacinia with several apical denticles and adjoining row of bristles as in most baetids. Labium (Demoulin, 1967, Fig. 2f; 1973, Fig. 3g) with glossae and paraglossae subtruncate apically, subparallel, and with long, fine setae apically; paraglossae exceed glossae in length; palps two segmented and with second segment swollen or expanded laterally and bearing long, fine setae.

Legs with or without row of long, fine setae on foretibiae and foretarsi (Demoulin, 1967, Fig. 1a; 1973, Fig. 3h). Ventral femoral patch absent. Claws (Demoulin, 1967, Fig. 2g; 1973, Fig. 3i) with numerically reduced but prominent denticles and without subapical bristles. Wingpads of mesothorax fused medially and nearly to apices (Fig. 1 and Demoulin, 1967, Fig. 1a; 1973, Fig. 3a).

Abdominal terga with scales and fine setae. Gills broadly rounded, thickened along anterior margin, with distinctly spiculate surfaces and spinous margins (Demoulin, 1967, Fig. 1b; 1973, Fig. 3n). Median terminal filament subequal to cerci.

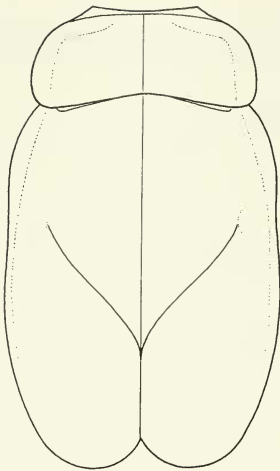


Fig. 1. *Pseudopannota bertrandi* larva, mesothorax.

Type species.—*Pseudocloeon bertrandi* Demoulin, 1967: 227 [= *Pseudopannota bertrandi* (Demoulin), New Combination].

Included species.—*Pseudopannota bertrandi* (Demoulin) and *Pseudopannota vinckei* (Demoulin) n. comb.

Distribution.—Ivory Coast, Madagascar, Senegal (River Gambia).

Etymology.—Feminine Latin: *pseudo*—false, *pan*—fused, and *nota*—back, in reference to the fused back condition of this schistonote mayfly. It thus appears falsely to be a member of the mayfly suborder Pannota sensu McCafferty and Edmunds (1979).

Remarks.—Adults are unknown presently; however, the larvae of *Pseudopannota* are distinct from all other described Baetidae on the basis of the medially fused mesothoracic wingpads, unique mouthparts, and uniquely denticulate claws. The unnamed larva described by Crass (1947: 64) as *Pseudocloeon* sp. appears to approximate very closely mouthpart, claw, and gill characters described for known species of *Pseudopannota*. Although we suspect that this species will prove to be a member of *Pseudopan-*

nota, we must wait to confirm this because we have thus far been unable to study any of Crass's (1947) material.

Ophelmatostoma Waltz and McCafferty, NEW GENUS

Larva.—Labrum (Kimmins, 1955, Fig. 3b) notched medially on anterior margin and with labral shelf. Mandibles (Kimmins, 1955, Fig. 3c, d) with incisors fused to apex; prosthecae prominent and bases appearing recessed into mandibular margin; spiculae present between bases of incisors and molar area. Thumb of left mandible broad based, curved, and slightly elevated above plane of incisor bases. Maxillae (Kimmins, 1955, Fig. 3f) with slender two-segmented palps and subequal in length to galealacinia; galealacinia with prominent falcate denticle apically in addition to two adjoining rows of bristles apically. Labium (Kimmins, 1955, Fig. 3g) with glossae and paraglossae greatly elongated, slender, and apically with long, fine setae; paraglossae subequal to glossae in length; palps apparently two segmented (segments 2 and 3 fused) and swollen apically, basal segment abruptly angled toward interior.

Legs with specialized ventral row of long, stout bristles on forelegs (Kimmins, 1955, Fig. 3h). Ventral femoral patch absent. Claws with single row of denticles and without subapical bristles.

Abdominal terga with scales and fine setae. Gills broadly rounded and with serrations on distal anterior margins. Median terminal filament subequal to cerci.

Type species.—*Ophelmatostoma kimminsi* Waltz and McCafferty n. sp.

Distribution.—Malawi [= Nyasaland (Kimmins, 1955)], South Africa (Transvaal), Zimbabwe [= Southern Rhodesia (Agnew, 1963)], and Senegal (River Gambia).

Etymology.—Neuter Greek: *ophelma*—broom, *stoma*—mouth, in reference to the distinctive filtering/sweeping-type mouthparts.

Remarks.—Adults of *Ophelmatostoma* are presently unknown. This genus, viz. the larvae, is clearly distinct from all other genera of Baetidae on the basis of the mouthpart characters (Fig. 2) described above. The described genera of baetids known to have filtering/sweeping mouthparts, i.e. *Guajiroliis* Flowers (1985) and now *Pseudopanota*, and *Ophelmatostoma*, have several similarly adapted but independently derived characters of the mouthparts. These include the profusion of long bristles and fine setae, prosthecae that appear to be recessed in the mandibular margin, and very long, thin apical denticles of the galealacinia. Specific character states of the mouthparts, tergum, claws, gills, and available knowledge of the adult stages indicate that these genera represent independently derived lineages.

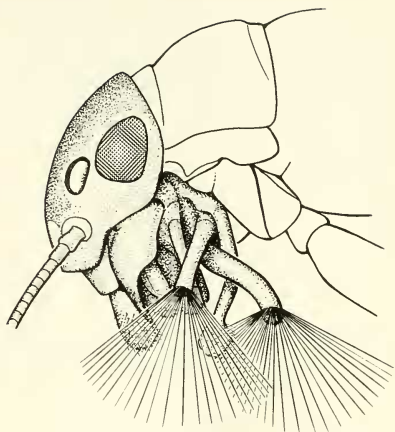


Fig. 2. *Ophelmatostoma kimminsi* larva, head capsule (lateral left side).

Ophelmatostoma kimminsi

Waltz and McCafferty, NEW SPECIES

Pseudocloeon sp. A, Kimmins, 1955: 866.

Larva.—Characterized as per Kimmins (1955) and as supplemented by the above generic description.

Type materials.—Holotype, larva, in alcohol, Malawi (=Nyasaland), Tengadzi Stream, 22.viii.1952, L. Berner, deposited British Museum (Natural History), London. Paratypes: 4 larvae; 3 paratypes in alcohol and 1 paratype slidemounted in euparal (solvent: absolute alcohol), Senegal (River Gambia), Kedougau, 28.vi.1981, M. T. Gillies, deposited Purdue University Entomological Research Collection, West Lafayette, Indiana, USA.

Etymology.—The specific epithet is for D. E. Kimmins, the British ephemeropterist who first studied the species.

Acanthiops Waltz and McCafferty,

NEW GENUS

Larva.—Labrum (Demoulin, 1967, Fig. 4a) notched medially on anterior margin and with labral shelf. Mandibles (Demoulin,

1967, Fig. 4b, c) with patch of setae between base of united incisors and molar region. Left mandible with incisors fused to apex; prostheca stouter than prostheca of right mandible and not appearing recessed into mandibular margin; thumb of molar region stout and distinctly elevated above plane of incisor bases. Right mandibular incisors apically separated. Maxillae (Demoulin, 1967, Fig. 4d) with palps two segmented and subequal to or less than length of galealacinia. Labium (Demoulin, 1967, Fig. 4f) with glossae and paraglossae slightly tapered apically; paraglossae subequal to glossae in length; palps three segmented; lateral margins of segment 2 subparallel; segment 3 short and narrower at base than apex of segment 2.

Legs elongate and without highly modified setal areas (Demoulin, 1967, Fig. 4a). Ventral femoral patch absent. Claws (Demoulin, 1967, Fig. 4g) with two rows of denticles and one pair of subapical anteriorly directed bristles. Prothorax and mesothorax with more or less prominent dorsal tubercles (Demoulin, 1967, Fig. 3a, b).

Abdominal terga with scales and fine se-

tae in addition to more or less prominent dorsal, medioposterior tubercles (Demoulin, 1967, Fig. 3a, b; 1964: 288). Gills asymmetric (Demoulin, 1967, Fig. 4i, l-p), with spinous margins anteriorly, and numerous fine tracheae. Median terminal filament greatly reduced relative to cerci.

Type species.—*Centroptilum marlieri* Demoulin, 1967: 230 [= *Acanthiops marlieri* (Demoulin), New Combination].

Distribution.—Zaire [= Belgian Congo], ?Kenya.

Etymology.—Masculine Greek: *akanthos*—thorn, *iōps*—small fish, an allusion to this genus being a tuberculate or spiny minnow-like mayfly.

Remarks.—The abdominal tubercles of *Acanthiops* are very highly developed, more so than in other baetid genera. The few other tubercled baetid genera, e.g. *Jubabaetis* Müller-Liebenau (1980), *Neobaetiella* Müller-Liebenau (1985), and *Baetodes* Needham and Murphy (1924), are clearly separable from *Acanthiops* on the basis of mouthpart, tergal, gill, and claw characters. Although adults of *Acanthiops* are unknown at the present time, Demoulin (1964) provided illustrations of a subimago associated with the larva he described as *Centroptilum* No. 3 from Kenya, a species which is probably congeneric with *A. marlieri* and differing from this latter species by lacking gill 1. The hindwing of this subimago possesses a bifurcate median costal process. This peculiar character state is thus far only associated with certain Afrotropical baetids, i.e. *Centroptiliodes* Lestage, and some *Centroptilum*. We suspect several Afrotropical species, which are clearly provisional with respect to their present generic placement, will eventually prove to belong to *Acanthiops*. These provisional species, whose larvae remain unknown at the present time, include *Centroptilum biarcuatum* Kolpelke (1980), *C. boettgeri* Kolpelke (1980), *C. dicentrum* Demoulin (1956), *C. montanum* Kimmins (1960), and *C. sudfricanum* Lestage (1924).

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ANNOUNCEMENT

Erratum: In the article by Wheeler, G. C. and J. Wheeler, 1986, *Proc. Entomol. Soc. Wash.* 88(4), p. 685, couplet 3b, please change "separate" to "paper."